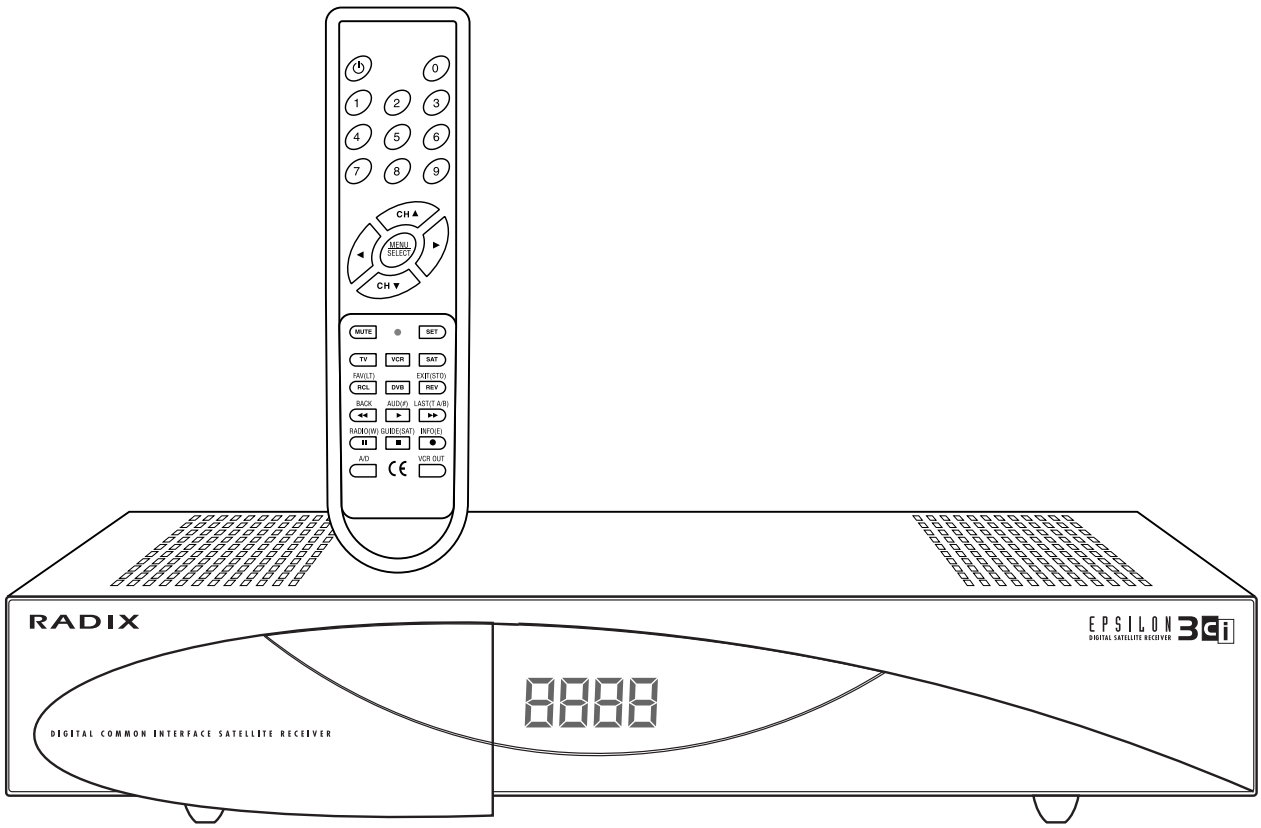
RADIX
TELECOMMUNICATION

Users Guide

EPSILON 3Ci
DIGITAL SATELLITE RECEIVER



Read these instructions carefully before using this appliance. • Retain for future reference.
RADIX shall not be liable for damages resulting from improper use of this appliance.

RADIX Electronic Vertriebs-GmbH • D-61381 Friedrichsdorf • F.R. Germany

Getting Started

Getting Started ... Quick Start ...

– The following is a brief description of a standard programme search -

- Place the **batteries** in the remote control. Match the batteries to the + and - signs inside the remote control.
- Press the blue **DVB** key on the remote control.
- Press the **Power button** to switch on the receiver.
- Using the CH▼ key, select the field with your **language** and press the **Menu key.**

The Main Menu now appears. You use this screen to make your programme settings. To get you started as quickly as possible, we will skip the next steps. You should follow all steps, however, if you want to perform an advanced search.

- Using the CH▼ key, select **Standard Search** and press the **Menu key.**

You now see a window containing settings for two different satellites. You can start the search process immediately if you receive either or both of the preset satellites.

- Select **Start Search** using the CH▼ key.

- Press the **Menu key** to begin searching.

While the receiver is searching, you will see the settings for each channel in succession. This process is indicated by an acoustic signal.

Wait until the search has ended and the receiver displays the **first programme**.

If nothing appears when the search is finished, please read the following instructions.

1 Introduction

Thank you for purchasing your RADIX E P S I L O N 3 ci digital satellite receiver. In doing so you have chosen an appliance built for the future, allowing you to take advantage of numerous programmes and additional services such as electronic programme guides which will eventually replace conventional analogue transmissions.

You can also use the enclosed universal remote control to operate an external analogue receiver, a digital receiver, a TV and a VCR.

All RADIX products are manufactured to the highest standards at our ISO 9002 accredited manufacturing plants.

In the unlikely event that you experience technical difficulties with your receiver, please note the following:

If it is necessary to return your receiver, please send it together with all its accessories and in its original packaging to your local dealer, from which you bought it and include a copy of your invoice or receipt as well as a detailed description of the problem. Please ensure you affix adequate postage to the package.

We hope you enjoy using RADIX digital satellite receiver!

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Publisher's statement:

EPSILON 3 ci Instruction Manual

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3 Important Safety Notes

This appliance is designed exclusively for receiving satellite signals. It must not be used for any other purpose. Keep the appliance out of reach of children. To avoid injury and to avoid damaging your receiver, please note the following:

DANGER:
Do not remove cover - risk of electric shock!
All repairs must be carried out by authorised service personnel.

DANGER:
Protect from moisture - risk of electric shock!

DANGER:
Do not place any objects into slots or ventilation holes - risk of electric shock!

WARNING:
Do not cover ventilation holes - risk of fire through overheating!

WARNING:
Only use original spare parts or professionally recommended spare parts. Failure to do so may result in damage or injury and will cancel the guarantee.

CAUTION:
Switch the appliance off during electrical storms or if it not used for long periods. Disconnect the antenna cable in an electrical storm.

CAUTION:
Do not use any chemicals to clean the receiver - use a slightly damp cloth only!

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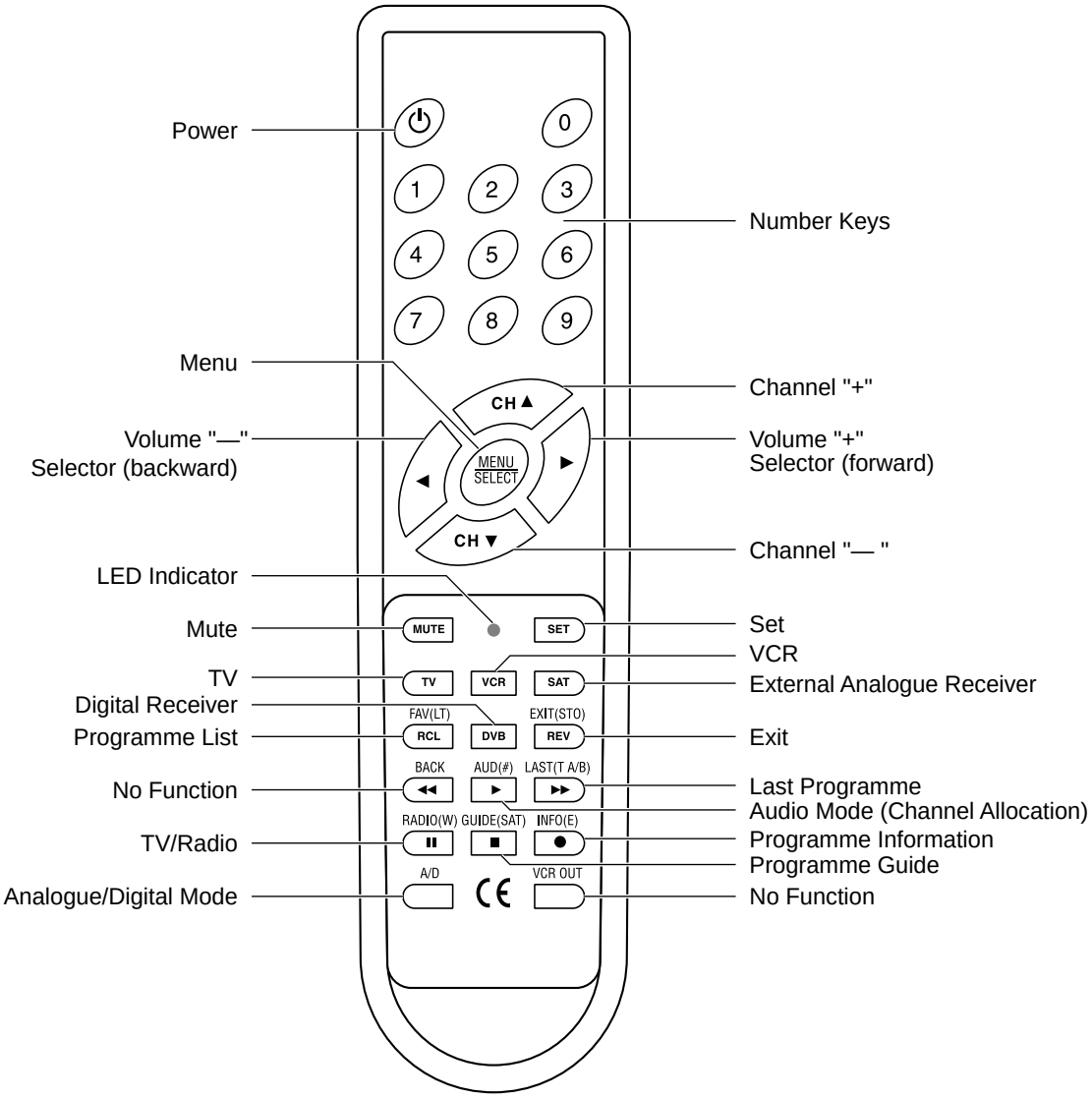
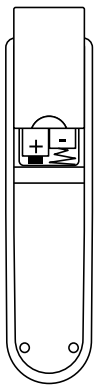
4 Your Receiver and its Functions

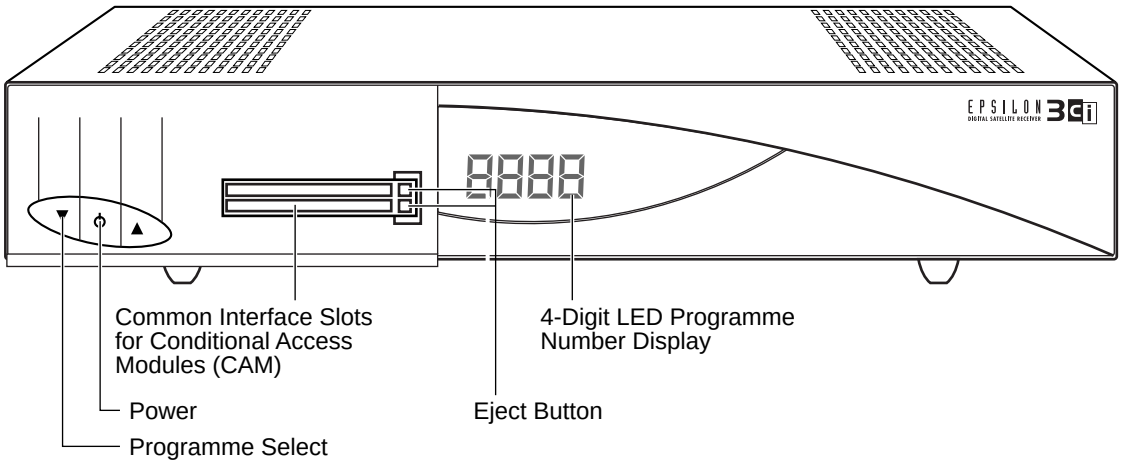
4.1 Remote Control



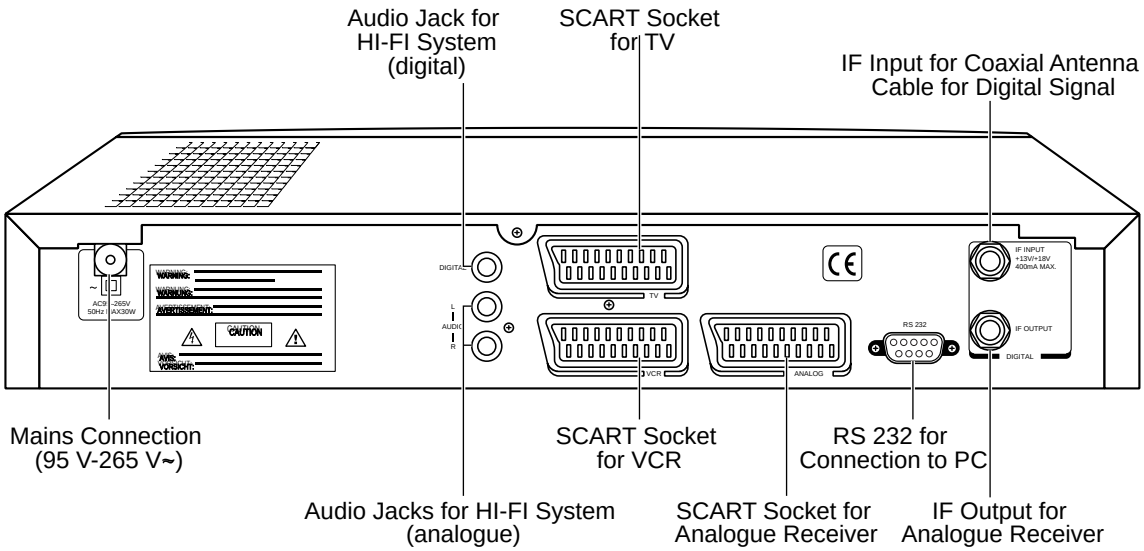


NOTE:
When fitting batteries, match the + and - signs on
the batteries to the signs on the inside of the remote control

4.2 Receiver



Front of Receiver



Rear of Receiver

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5 Installing Your Receiver

5.1 Before You Start

CAUTION:

Do not place the receiver near any heat sources or in strong sunlight.

Protect all cables from damage caused, for example, by sharp edges.

This appliance must only be used with a mains voltage of 230 V (± 10%), 50 Hz.

Install the antenna in accordance with the manufacturers instructions.

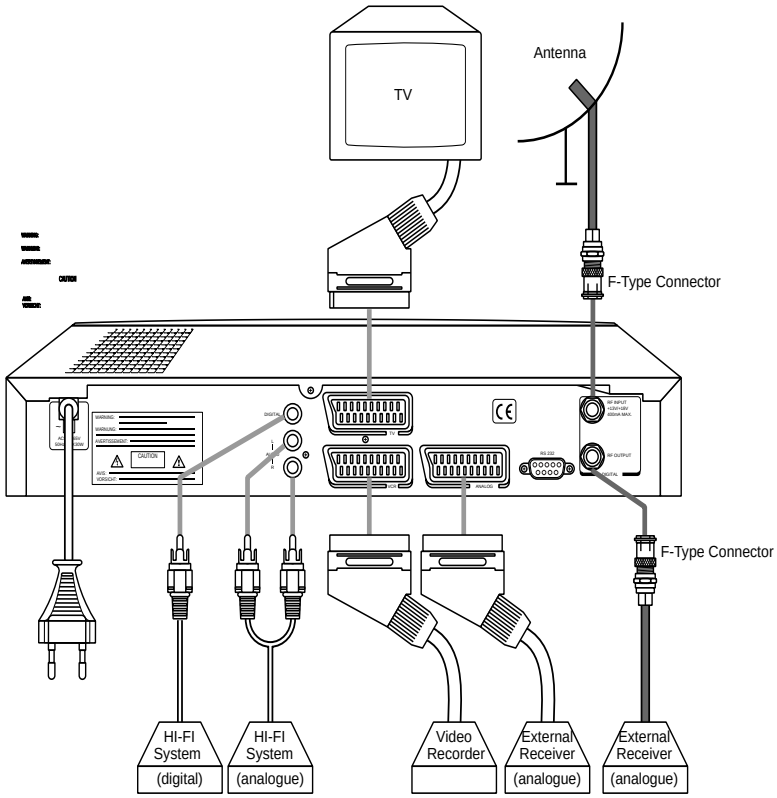
The following information is necessary for programming the digital components:

- your time zone (= deviation from GMT – see appendix),
- summer time yes/no,
- picture format for your TV,
- The appropriate LNB oscillator frequency (referred to in the “LNB Local-Frequency” menu),
- Programme frequencies and polarities for manual programming (available in satellite magazines, specialist stores).

You must program the EPSILON 3 ci before use. Full instructions are provided in Section 6. If you are in a hurry and if you already have experience programming receivers, you can use the Quick Guide to get started.

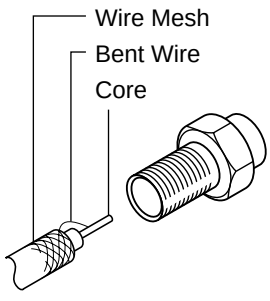
5.2 Connecting the Antenna and Other Devices

CAUTION:
Do not connect the receiver to the mains until you have correctly connected your VCR, TV and any other analogue receiver you may have.



- Use double-shielded coaxial cable to connect the LNB to the receiver.

CAUTION:
When assembling the F-type connector, make sure that no part of the inner wire-mesh sheath touches the inner core (see diagram below). Failure to do so can cause a short-circuit and damage your receiver.



- Tighten the safety nut on the F-type connector by hand only. Do not over tighten!

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6 Programming your Receiver

6.1 Switching On

DVB

- Press the blue DVB key to activate your remote control (See Section 8 for details on programming your remote control).

The red LED indicator flashes briefly.

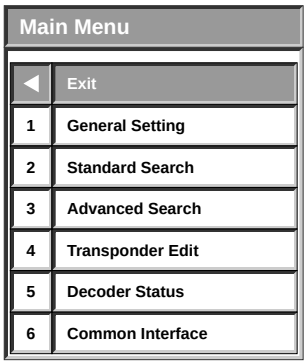
- Press the Power button on your receiver.

The ON message appears on the receivers display and the following screen appears:

- Select your language using the CH▲ and CH▼ keys.
- Press the Menu key to confirm your choice.

6.2 The Main Menu

The Main Menu appears on your TV screen:

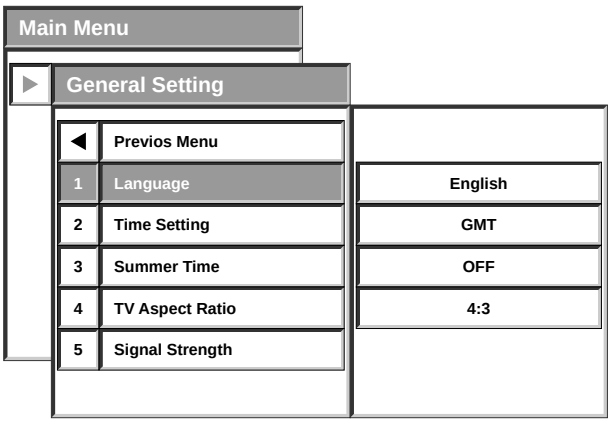


This menu allows you to programme your receiver. You will only need to do this when you set up your receiver for the first time or when adding new channels.

6.2.1 General Settings

- Using the CH▼ key, select the first menu option: General Settings.
- Press the Menu key to confirm.

The General Settings menu appears. This contains fields in which you can enter and change the receivers settings:



- Using the CH▼ key, select the Language field and press the Menu key to confirm.

- Scroll through the list of languages using the CH▲ and CH▼ keys and choose ”Deutsch”, ”English”, ”Français” or ”Italiano”. Now press the Menu key to confirm.

- Select the next menu option ”Time Setting” using the CH▼ key and press the Menu key to confirm.

- Using the CH▲ and CH▼ keys, enter your local time zone to the nearest 30 minutes (deviation from GMT). For more information, refer to the time zone map at the back of this guide. Press the Menu key to confirm your selection.

- Using the CH▼ key, select ”Summer Time” and press the Menu key to confirm.

- Select either YES or NO using the CH▲ and CH▼ keys and press the Menu key to confirm.

- Now select **”TV Aspect Ratio”** using the CH▼ key and press the Menu key.

- Choose either 4:3 or 16:9 using the CH▲ and CH▼ keys.

- Press the Menu key to confirm your choice.

- Press the Exit key to close this menu.

6.2.2 Standard Search

Before you can receive digital programmes, you must first store them in your receiver.

- Using the CH▼ key, go to the Main Menu and select ”Standard Search”.

- Confirm this using the Menu key.

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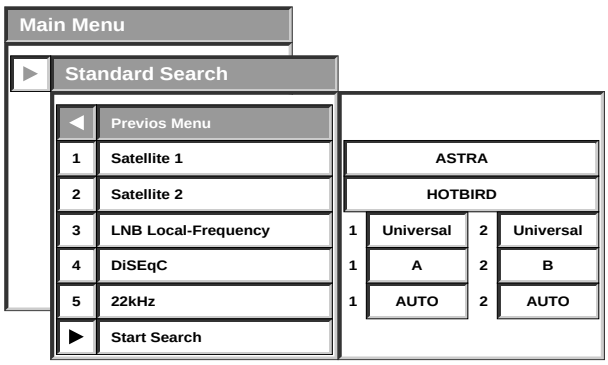
The Standard Search menu appears together with the relevant settings fields:



NOTE:
To make the search as easy as possible, your receiver already contains settings for the two most commonly used satellites: ASTRA and HOTBIRD.

If these settings are correct for your system:

- Select ”Start Search” using the ▼ key and press the Menu key.

If these settings are **not** correct, you can change them as follows:

- Select **”Satellite 1”** using the ▼ key and confirm this by pressing the Menu key.
- Select the correct satellite from the list using the CH▲ or CH▼ keys.
- Press the Menu key to confirm.
- Select **”Satellite 2”** from the menu using the ▼ key and press the Menu key to confirm.
- Using the ▲ and ▼ keys, select your second satellite from the list. If you are not using a second satellite, select ”No Satellite 2”.
- Press the Menu key to confirm.

The next menu option on the ”Standard Search” menu allows you to set the LNB oscillator frequency. Please refer to your LNB documentation for the correct settings.

- Select ”LNB Local-Frequency” using the ▲ and ▼ keys and press the Menu key to confirm.
- Choose the appropriate frequency setting for Satellite 1 with ▲ or ▼ or the setting ”Universal”.
- If you cannot find the correct frequency in the list, you can enter the frequency using the number keys.
- Move to the section on the right using the ► key and repeat this procedure for Satellite 2 if necessary.
- Press the Menu key to confirm.

NOTE:
The following settings apply to DiSEqC (Digital Satellite Equipment Control). You must have a DiSEqC switch installed on your system to carry out these steps.

- Select the field ”DiSEqC” using the ▲ or ▼ key.

- Press the Menu key to confirm.

- Select the correct setting for Satellite 1 using the ▲ or ▼ key as specified by the manufacturer of your switch. If you do not have a DiSEqC switch, choose NO.

- Move to the section on the right using the ► key and repeat the procedure for Satellite 2 if necessary.

- Press the Menu key to confirm.

The setting ”22 kHz” is set automatically so you can proceed directly to the next step.

All of the options (1-5) in the Standard Search menu must be filled. Once you have done this, you can automatically search for all channels according to the settings you made:

- Press the ▲ or ▼ key and select ”Start Search”.

- Press the Menu key to begin searching.

While the receiver is searching, a timer appears on the screen. Above this is a blue progress bar which indicates the frequencies being searched. In addition, the following information is also displayed:

DF: .... - Satellite frequency
SR:.... - Symbol rate
.../... - Number of programmes found / Number of programme packages
New:... - Number of stored programmes

When the timer expires, a message appears informing you that the search has been successful. However, if a message appears stating ”out of range” or that the search has failed, you must check your settings and correct them where necessary until the search is successful.

- To close this menu, press the Exit key.

6.2.3 Advanced Search – Finding Encoded Programmes

If you want to receive encoded or encrypted programmes, you must have a **C**onditional **A**ccess **M**odule (CAM) installed. This module is used to read the contents of you authorisation or access card (Smartcard).

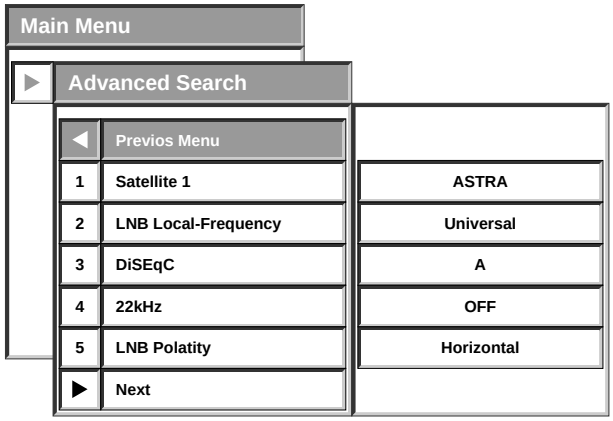
Your receiver has two such slots and you can use them both at the same time for different encryption modules.

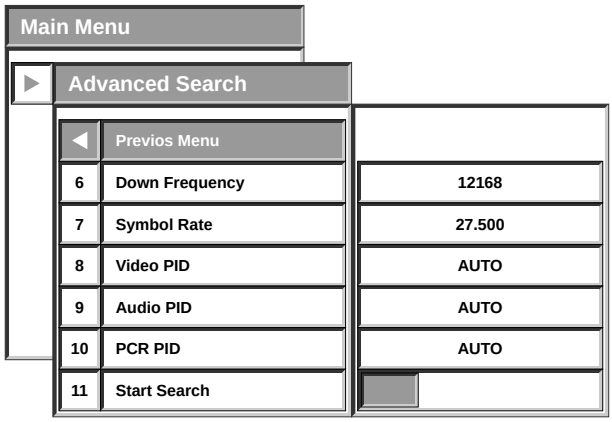
- Open the flap on the left side of your receivers front panel.
- Insert the CAM all the way into the Common Interface Slot (CI Slot).
- Insert the SmartCard into the module with the chip facing upwards and away from the receiver.
- Close the flap on the front of the receiver.

The Advanced Search feature allows you to program additional channels individually or to change existing settings. You must edit each menu option separately for each group.

The procedure for creating settings is exactly the same as before. Simply change the settings as you did for the Standard Search making sure you have all the necessary information before you begin (see Section 5.1).

Open the Main Menu and select ”Advanced Search”. The following screen appears together with fields for changing settings:





- Proceed through each of the menu options making changes as you did for the Standard Search.

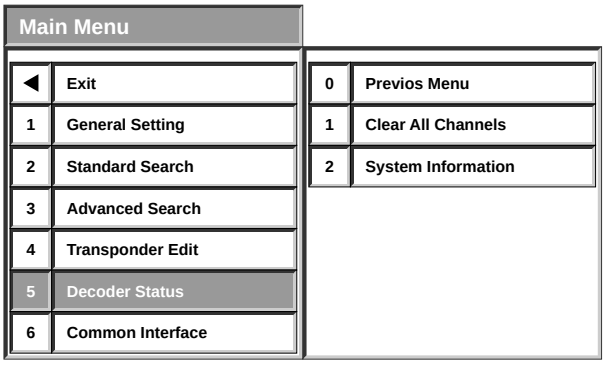
- Select ”Start Search” and press the Menu key to confirm.

You can monitor the search progress visually by means of the blue progress bar or by means of the acoustic signals.

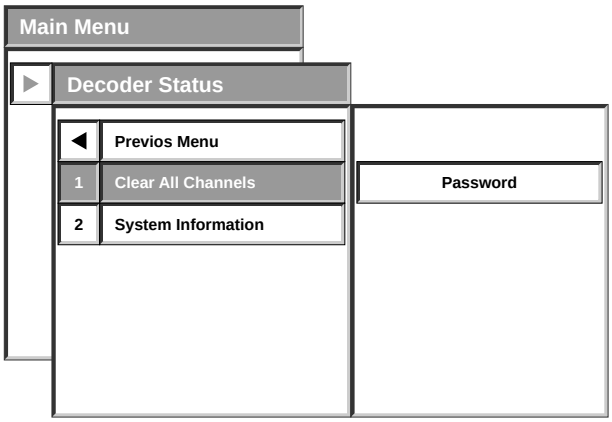
- Press the Exit key to close this menu.

6.2.4 Decoder Status – Clear All Channels

Open the Main Menu and select ”Decoder Status”. Press the Menu key to confirm and the following screen appears:



- Select ”Clear All Channels” and press the Menu key to confirm.



CAUTION:
This function deletes all settings and you will have to completely reprogram your receiver.

0 . . . 9

- Enter the following password using the number keys: 9-8-1-5.

Before you can clear all channels, you must confirm once more that you want to do this:

1 0

- Press (1) for YES or (0) for NO.

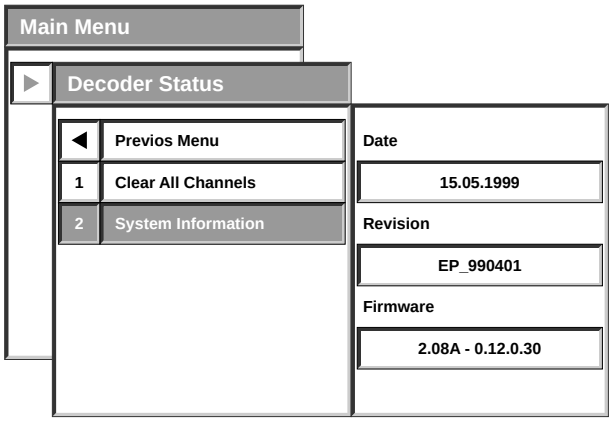
EXIT(STO)
REV

- Press the Exit key to close this menu.

6.2.5 Decoder Status – System Information

You can use this option to get information on the current status of your receivers software.

- Open the Decoder Status menu and select ”System Information”. Press the Menu key to confirm this.

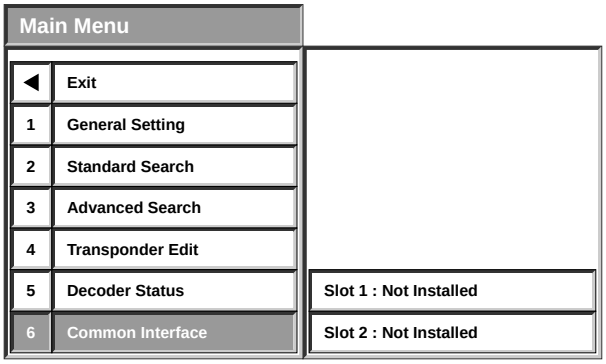


6.2.6 Common Interface

This option allows you to see which CA modules are currently being used in CI slots 1 and 2.

- In the Main Menu, select ”Common Interface”.

You now see details of which cards are in the card slots - if there is a card in the slot, its code version appears. If no cards are present, ”Not Installed” appears:



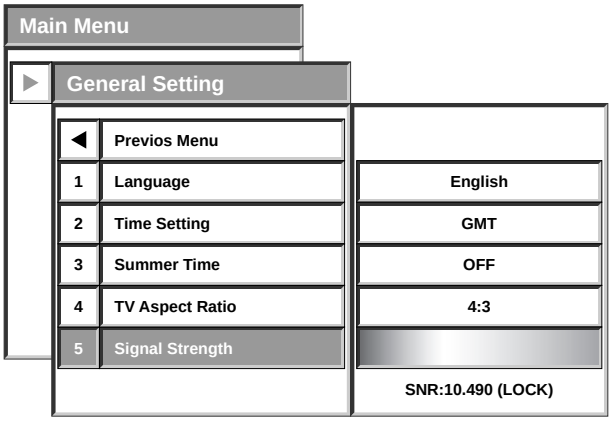
Please note that it takes approximately 30 seconds after you insert a card for its details to appear on-screen.

6.2.7 Checking the Signal Strength

In order to receive the best quality signal, your satellite antenna must be correctly aligned.

- Open the Main Menu and select ”General Settings”. Select **“Signal strength“** using the CH▼ key and confirm.

Providing you can receive at least one channel, the following menu appears on your screen:



The signal strength indicator is divided into three separate sections: red, yellow and green. These colours represent the strength of the signal:

Red: BAD,
Yellow: FAIR,
Green: GOOD.

The following information also appears:
“(LOCK)” and a number for ”SNR” (Signal Strength) or
„(UNLOCK)” and „0.000” for ”SNR” if there is no signal.

As the strength of the signal increases, the acoustic signals which accompany the on-screen information become shorter and more rapid.

- Carefully adjust the position of your satellite antenna until the signal strength is completely green.

Congratulations! You are now receiving the best possible signal quality.

If you cannot find a signal, check all connections between your receiver and the antenna as well as all receiver settings.

- Press the Exit key to close this menu.

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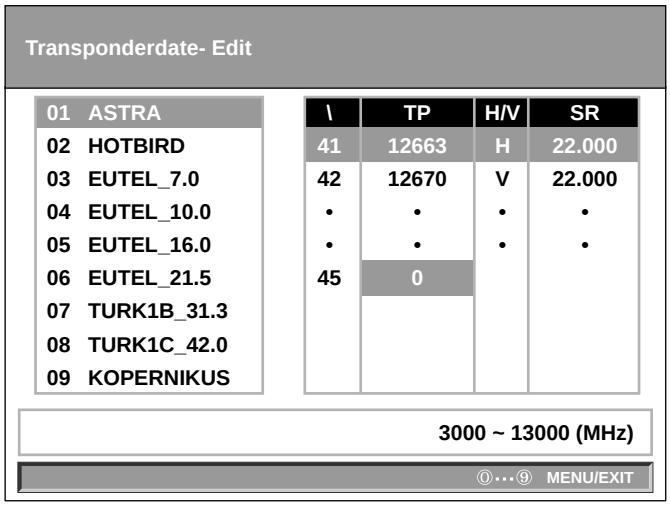
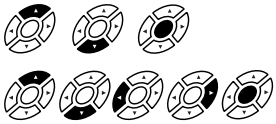
6.2.8 Editing Transponder Data

To ensure that future transponders and channels will be included in the Standard Search, you must enter the relevant information in the transponder list using the Transponder Edit menu.
You do not need to do this if you have entered this information manually using the Advanced Search menu.

Select Transponder Edit from the Main Menu and the following screen appears:



The bar at the bottom of the screen shows which keys are needed for navigation.



- Select the satellite you want to use and press the Menu key to confirm.
- In addition to the preset transponder data, you can also add additional data.
- Repeat this process for all settings. When you have finished, press the Exit key to return to the Main Menu.

EXIT(STO)
REV

7 Using your Receiver

Once you have finished all of the basic settings described above, you can begin using your receiver.

NOTE:
Digital communications involve the transfer and processing of large amounts of data simultaneously. This means that there may be a slightly longer delay when changing channels compared to traditional TV.

7.1 Switching you Receiver On

- Press the Power button on your receiver. Now press the Power key on your remote control.

7.2 Switching to an Analogue Receiver

If you have an external analogue receiver connected, you can receive channels from it using your digital receiver.

- Press the A/D key on your remote control to switch from digital to analogue mode.

The signal from your analogue receiver is carried through your digital receiver to you TV and VCR (if connected).

The analogue signal is still carried even if your digital receiver is in standby mode. You can still see and hear analogue programmes.

7.3 Selecting Channels

- Use the number keys to select the channel of your choice (see also ”Programme Lists” in Section 7.6).

NOTE:
Each channel has a four-digit number, for example, 0001 and so on. You can also enter 1, 2 or 3 digits (for example, 1, 13, 135). In this case, the desired channel will appear in about three seconds.

- Use CH ▲ to move to the next highest channel. Use the CH ▼ to move to the next lowest channel.

- To go to the last channel you visited, press the ”Last” key.

Each time you change channel, the channel number, date, time and ”Channel Change” are displayed on your TV screen.

If the new channel is on the same frequency as the previous one, it will appear and the information mentioned above will be displayed. If the channel is on a different frequency, the message ”Tuning HF Signal” appears. The new channel takes slightly longer to appear.

The information displayed by the receiver remains on your screen for approximately three seconds or until you press the Exit key.

7.4 Volume Control/Mute Sound

- Use the ► or ◄ keys to adjust the volume.

- Use the Mute key to mute the sound:

- To restore the sound, press the Mute key again or press the ► key.

The on-screen display disappears after a few seconds.

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7.5 Listening to the Radio

In addition to television programmes, many broadcasters transmit their radio programmes in digital HIFI format.

- Press the Radio key to switch from TV to Radio mode.

- Use the channel keys ▲ or ▼ to scroll through the channels as you would in TV mode.

- Press the Last key to return to the previous channel.

- To return to TV mode, press the Radio key again.

All programme list functions can be used in both Radio and TV mode.

7.6 Selecting the Audio Mode

Several broadcasters transmit their TV programmes in different languages and audio formats.

- Press the Audio key and select the field on the left using the volume keys ► or ◄ to choose one of the available languages:

- Use the channel keys ▲ or ▼ to change the language setting.

- Use the volume keys ► or ◄ to select the field on the right.

- Select one of the following options using the channel keys ▲ or ▼:

Stereo (L+R)	– left and right
Mono1 (L+L)	– left only
Mono2 (R+R)	– right only
Swap (R+L)	– alternating

- Press the Audio key again to return to TV mode.

8 Programme Lists and Information

Digital television offers you hundreds of channels and it's easy to lose track of your favourites. To help you find your favourite programmes quickly and easily, you can create programme lists (Favorite Menu).

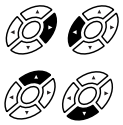
8.1 Displaying a Programme List

8.1.1 Full-Screen Mode

- Press the FAV key while watching a programme:

NOTE:
The current channel being displayed in the background is changed if the programme number is selected for more than a few seconds.

You can use the following functions:



- Use the volume keys ► or ◄ to scroll or to place a programme.

- Use the channel select keys ▲ or ▼ to select or to place a programme.

- Press the FAV key to create or change your list of favourites (see Section 8.2).

- Press the Radio key to switch to radio mode.

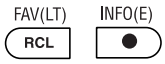
- Press the INFO key to see programme information.

- Press the Menu key to store your programme list.

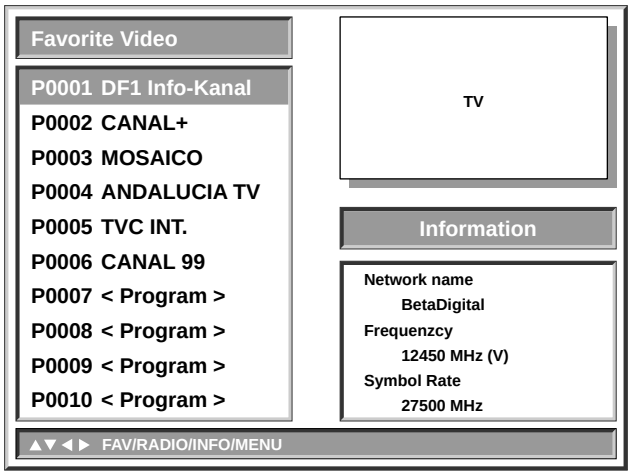
- Use the number keys to select a programme directly.

GB

8.1.2 Compact View Mode



- Press the FAV and INFO keys while viewing a programme:



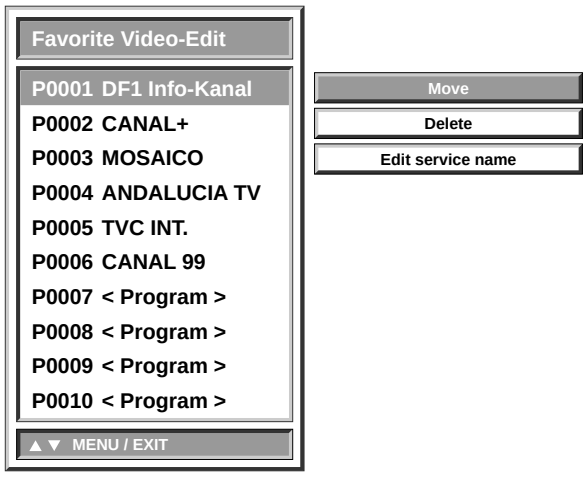
The same functions are available here as in full screen mode.

8.2 Editing your Programme Lists (List of Favourites)

The following steps apply to both TV and Radio modes. At the bottom of the screen, you can see a list of function keys for this screen: Change (arrow or number keys), Confirm (Menu key), Close menu (Exit key).

8.2.1 Moving a Programme

- Press the FAV key while viewing a programme to open the Favourite menu:

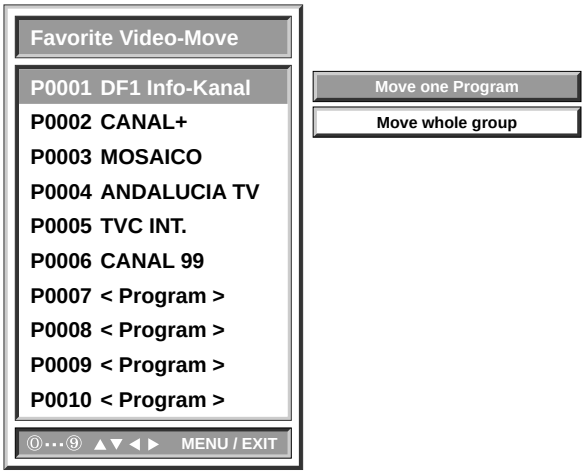


- Select “Move“ and press the Menu key to confirm

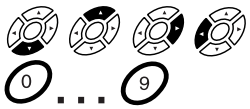
- Select the programme you want to move (or the first channel in a group) using the channel select keys ▼ or ▲.

- Press the Menu key to confirm.

Moving a Programme:



- Press the Menu key.



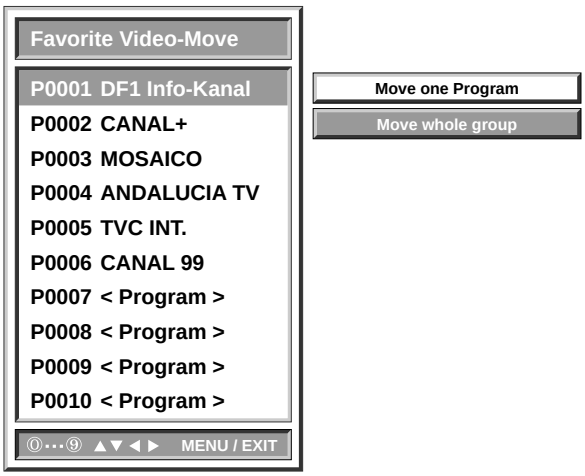
- Using the channel, volume or number keys ▼, ▲, ► or ◄, select the location where you want to move the programme to.

- Press the Menu key to confirm.
- Repeat this procedure to move other programmes.

- To close the menu, press the Exit key twice.

NOTE:
Your receiver stores the list you edited in its memory. An hourglass appears on-screen while it does so.

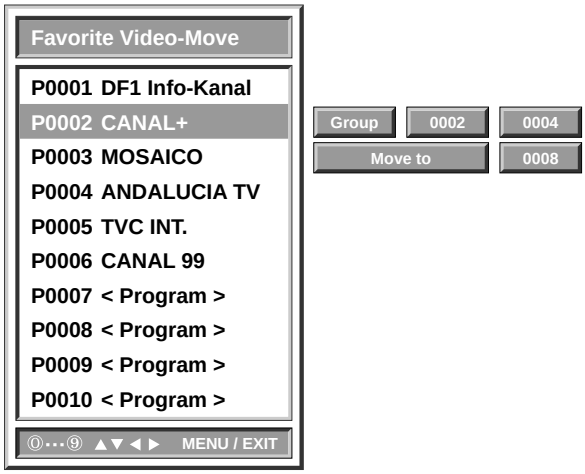
Moving a Group of Programmes:

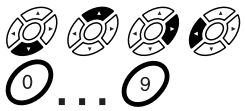


- Select “Move Whole Group“ using the ▼ key.

- Press the Menu key to confirm.

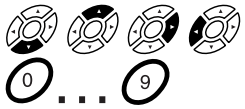
GB





- Using the channel, volume or number keys ▼, ▲, ► or ◄, select the last programme of the group.

- Press the Menu key to confirm this.

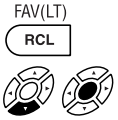


- Enter a new start position for this programme group and confirm it by pressing the Menu key.

- You must confirm the move once more using (1) for YES and (0) for NO.
- Repeat this procedure as often as necessary.

- To return to Edit mode, press the Exit key once. To close this menu completely, press the Exit key twice.

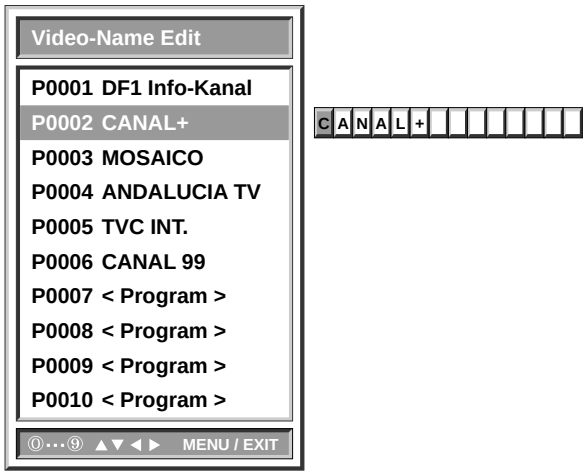
8.2.2 Deleting a Programme



- Press the FAV key while in the programme list.
- Select “Delete“ using the ▼ key and press the Menu key to confirm.

Repeat the procedure as described in Section 8.2.1 “Moving a Programme“.

8.2.3 Changing a Programme Name



FAV(LT) RCL

- With the programme list open, press the FAV key to rename a programme.

- Select “Edit Service Name“ using the ▼ key and press the Menu key to confirm.

- Select the programme you want to rename and press the Menu key to confirm.

The name of the programme to be changed appears on your screen in a 14 character line.

- Select a character using the volume key ► and enter a new letter, character or number using the channel select key ▲ or ▼.

- Repeat this procedure until you have changed the name. Press the Menu key to confirm.

EXIT(STO) REV

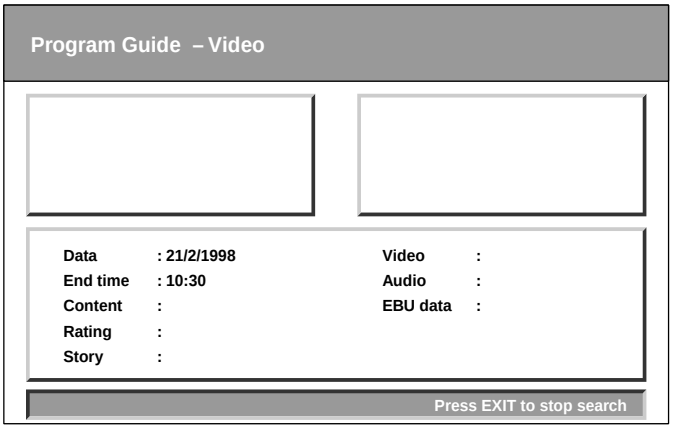
- To return to the Edit menu, press the Exit key once. To close this menu completely, press the Exit key twice.

8.3 Programme Information

Digital television allows broadcasters to transmit an electronic TV guide and other additional information along with the signal. Unfortunately this capability is not utilised by all TV broadcasters.

GUIDE(SAT) ■

- While viewing a programme, press the GUIDE key to open the following overview screen:



GB

In addition to the programme overview, the following information is also available:

Video:	Content:
4:3	Feature Film / Drama
16:9	News
16:9 (pan vector)	Show / Gameshow
> 16:9	Sport
	Kids / Teens
Audio:	Music / Dance
Single mono	Art / Culture
Dual mono	Social / Politics / Economy
Stereo	Education / Learning
Multilingual	Leisure
Surround	Special
EBU Information:	Suitability:
Teletext Subtitles	Over 7 years of age
Teletext	
Subtitles	
Subtitles (4:3)	
Subtitles (16:9)	
Subtitles (2.21:1)	

- Press the Exit key to stop the programme operation.

- Use the channel select and volume keys ▼, ▲, ► or ◄ to select the appropriate options and display the additional information.

- Press the Exit key to exit the programme overview.

9 Programming your Remote Control

You can programme the remote control in two ways: you can either use the three-digit manufacturers setup code (listed by manufacturer at the back of this guide) or you can perform a systematic search.

Method 1: Enter the Manufacturers Setup Code

Step 1: Press and hold down the SET key for approximately three seconds until the red LED lights up.

Step 2: Press one of the following device keys to set the desired device:

SAT	Analogue Receiver
DVB	Digital Receiver
TV	Television
VCR	Video Recorder.

Step 3: Find the manufacturers code for your device in the list of codes. If there is more than one code, you will need to try each one until your remote control works with your device.

Make sure that the device is switched on.

Point the remote control at the device.

Enter the three-digit code using the number keys. If your device switches off, your remote control is ready to use.

Step 4: Press the SET key to store the settings. The LED will blink three times.

If this does not happen, repeat steps 1 to 4.

Method 2: Systematic Search

Step 1: Press and hold down the SET key for approximately three seconds until the red LED lights up.

Step 2: Press one of the following device keys to set the desired device.

SAT	Analogue Receiver
DVB	Digital Receiver
TV	Television
VCR	Video Recorder.

Step 3: Switch on your device.

Point the remote control at the device.

Press the Power key repeatedly until the device switches off.

NOTE:
Many devices do not switch off immediately - you should wait briefly before pressing the Power key again.

Step 4: Press the SET key to store the settings.
The LED will blink three times.

If this does not happen, repeat steps 1 to 4.

When you have finished:

- Press the blue key for the device you want to operate.
- When the LED flashes quickly, you can use the remote control as normal.

GB

Trouble Shooting

10 Trouble Shooting Your digital Receiver

Problem	Possible Causes	Solution
No picture but on-screen menus appear	Satellite system is faulty in correctly installed, Faulty LNB	Check all connections and leads, adjust satellite antenna, Check LNB
	High levels of signal loss through cables	Replace cables or use a signal booster
	Faulty LNB	Replace LNB
	Faulty connection (Water/corrosion damage)	Repair connection
No stereo sound	Incorrect cable connecting TV and receiver	Check SCART cable
Remote control not working	DVB not selected	Press DVB key
	Batteries exhausted	Replace batteries
	Incorrect device selected	Press correct device key
	Remote control not pointed at device	When using remote control, make sure it is pointing at device
CA Module not working (cannot receive encrypted programmes)	Module not fully inserted into slot	Open Main Menu and check option 6 “Common Interface“. If “Not Installed“ appears remove module and replace correctly
	Faulty module	Replace module
	SmartCard not inserted properly	Make sure that chip is facing upwards and away from receiver
	Faulty SmartCard	Replace SmartCard

11 Recycling and Disposal

Please dispose of the device, packaging such as polystyrene and all batteries in accordance with your local regulations and recycle wherever possible.

12.1 Brand-Codes for Universal-RCU

Producer	SAT Code
ALBA	009 028 034
AMPERE	001 002
AMSTRAD	001 002 007 035
ARCON	041
ARISTONA	026
ASTRA	033
BLAUPUNKT	019
BUSH	026 028 034
CONNEXIONS	020 021
DISKXPRESS	020
FERGUSON	025 026 031 032
FINLUX	005 006
FRACARRO	046
FTE	042
FUBA	001 002
GOLDSTAR	041
GRAETZ	047
GRUNDIG	003 019 026 029 032
HIGH PERFORMANCE	045
HIRSCHMANN	001 002 005
INGLELEN	047
ITT-NOKIA	032 047
KATHREIN	042 043 049
KRIESLER	026
LENCO	041
LUXOR	047
MAGAI	042
MARANTZ	014
MASPRO	023 026
METZ	003
MINERVA	003
MULTISTAR	042
NEC	010 017 036
NEIRU	041
NOKIA	047
NORSAT	022
PACE	024 026 031 032 040
PANASONIC	011
PHILIPS	013 014
PHONOLA	026
PROSAT	028
PYE	026
QUELLE	003
RADIOLA	026
RADIX	001 002
REDIFFUSION	017 022
SAISHO	012
SAKURA	027
SALORA	015 033 047
SAMSUNG	042
SATPARTNER	041
SCHAUB LORENZ	047
SCHNEIDER	026
SENTRA	018
SIEMENS	003 019
SIERA	026
SILVA	041
STARSAT	042
TANDY	045
TATUNG	016 037
TECHNISAT	004
TELEFUNKEN	044
TELEKA	001 002
THORN-FERGUSON	008 025 026 031 032
TRIAD	045
UNIDEN	030 038 039 042
VORTEC	044
WELA	001 002
WISI	001 002
WOLSEY	045
ZEHNDER	042

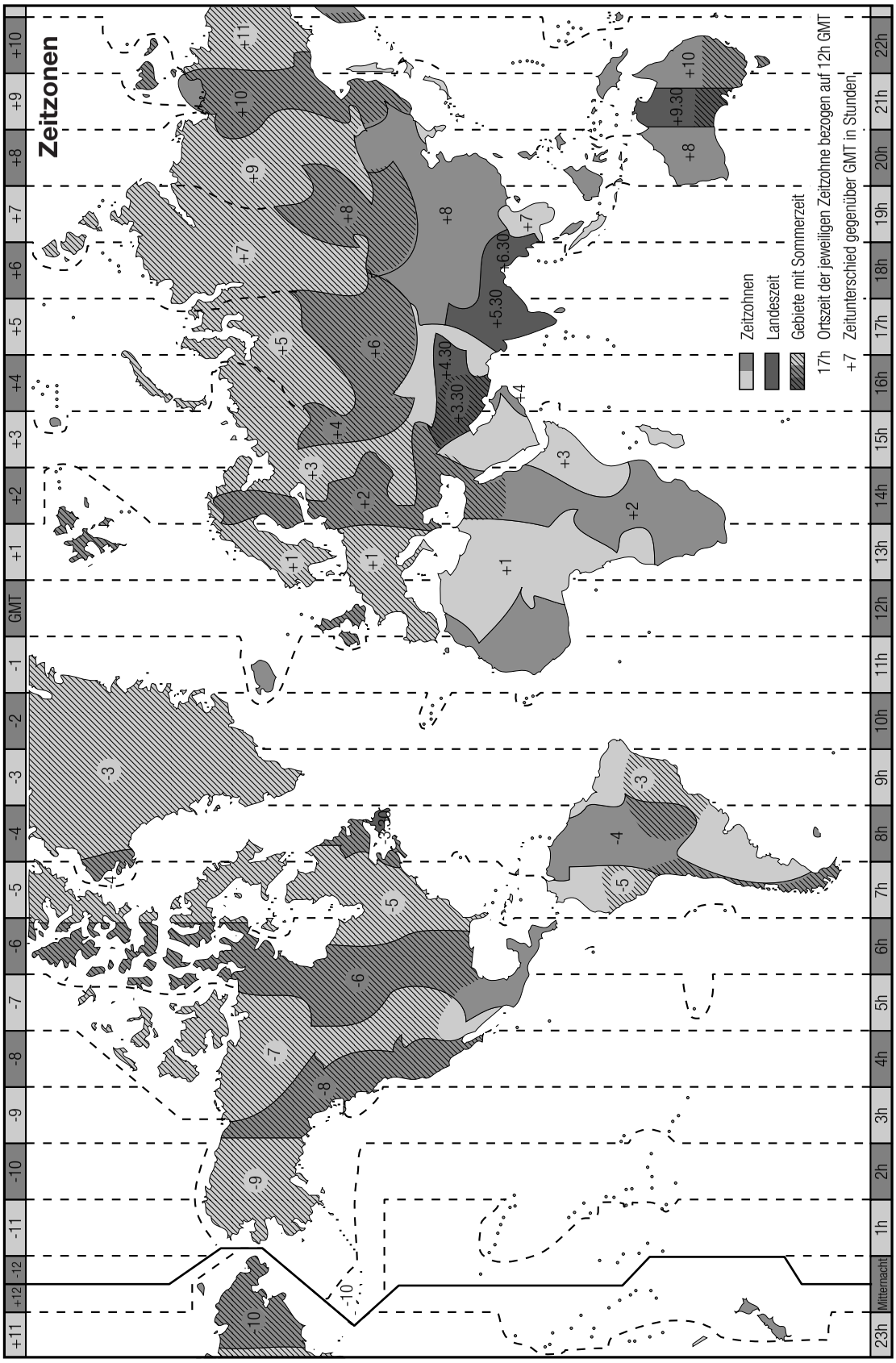
Producer	TV Code
ADMIRAL	039 114
AKAI	037 090
ALBA	076 087
ALBIRAL	074
AMSTRAD	004 005
ARC EN CIEL	007 016 020 043
ARISTONA	029 037 039 045 067 104 106
ARTHUR MARTIN	064 081 086 089 090 098 101
ASA	039 044 050 052 071 114 134
ATLANTIC	029 068
AUTOVOX	029 044 045 050 103
BAIRD	117
BEKO	037
BLAUPUNKT	013 014 028 031 033 035 056 068 072
BOOTS	125
BRANDT ELECTRONIQUE	007 016 020 043
BRION VEGA	039 122
BRUNS	032 039
BSR	065 112
BUSH	009 087 093 097
CENTURY	039 109 128
CGE	013 054 093 109 112 128
CIHAN	066 078
CLARIVOX	032 074 079
COMTEL	066 078 079 083
CONDOR	029 068
CONTEC	120
CONTINENTAL EDISON	007 016 020 043
CROSLEY	013 039 062
CROWN	102
CTC CLATRONIC	026
DAEWOO	091 095 107 132
DECCA	029 060 066 073 084
DEGRAAF	012 075
DIXI	037 133
DRYNATRON	037
DUAL	029 053
DUAL-TEC	023 029 112
DUMONT	026 039 050 096
DUMONT-FINLUX	010 026 036 044 052 062 071 097
ELBE	074
ELBIT	066
ELCIT	026 027 039 062 099 112
ELMAN	026 112
ELTA	133
EMERSON	004 039
ERRES	037 067
EUROPHON	026 027 029 040 073 112
FERGUSON	018 042 046 050 061 074 104
FIDELITY	029 104
FINLANDIA	075
FINLUX	010 026 036 044 050 052 062 071 096 097 109 134
FISHER	032 039 041 062 128
FORGESTONE	104
FORMENTI-PHOENIX	029 062 068 098
FORTRESS	129
GBC	017 062 112
GEC	029 060 062 073 114 131
GELOSO	017 062 112 114 133
GENEXXA	076
GOLDSTAR	003 029 037 100 133 138
COODMANS	009 037 060
GORENJE	007 128
GRAETZ	001 052 062 089 090 101 105 108 114
GRANADA	009 029 037 051 060 067 073 098 114
GRUNDIG	031 050 051 059 070 072 111
HANSEATIC	009 029 037 062 064 068
HANTAREX	027
HEMMERMANN	099
HIFIVOX	007 016 020 043
HINARI	004 009 025 133
HITACHI	009 010 012 029 043 048 062 064 065 080 081 112 114 118 123 131
HYPER	029
IMPERIAL	013 093 109 112 128
INGELEN	001 051 062 089 090 101 105 108 114
INNO UIT	027 029 133
INTER	078
INTERFUNK	037 039 043 051 062 067 090 101 105 123
IRRADIO	017 133
ITT-NOKIA	001 051 055 062 089 090 101 105 108 114 115 117 132
JVC	009 113 116
JAISUI	076
KENNEDY	045 062
KÖRTING	039 068
KRIESLER	029 037 039 045 067 104 106
KTV	029
LENOIR	029
LOEWE OPTA	027 037 039 073
LOGIK	084 104
LUMA	037 086 114
LUXOR	051 064 075 081 086 090 105 115 117 126
MAGNADYNE	026 027 039 062 073 099 112
MAGNAFON	026 027 029 040 073
MARANTZ	037
MATSUI	004 029 058 060 084 087 114 121 133
McMICHAEL	131
MEMOREX	113
METZ	030 039 072
MINERVA	031 050 051 072
MISTRAL	104
MITSUBISHI	009 011 003 039 063 084 085 110 124
MIVAR	027 029 073
MULTITECH	026 029 073 128
MURPHY	114
NAONIS	023 045 065 114
NATIONAL	019 062
NEC	009 119
NECKERMANN	029 039 064 086 121 128
NEI	037 079
NIKKAI	060 076
NOBLIKO	026 029 050
NOGAMATIC	007 016 020 043
NOKIA	001 051 062 089 090 101 105 108 114
NORDMENDE	007 016 020 043 123
ONCEANIC	062 090
ONCEAS	029
OPTONICA	129
ORION	002 004 030 084 087 099 130 133
OSAKI	060
OSCME	120
OTTO VERSAND	009 037 062 064
P.T. ACTRON	066
PAEL	029
PANASONIC	008 019 022 057 062 088
PATHE' CINEMA	029 068 074 112
PATHE' MARCONI	007 016 020 043
PERDIO	060
PHILCO	008 013 039 062 093 109 112 128
PHILIPS	029 037 039 045 067 104 106 131

Appendix

PHOENIX	029 062 058 098
PHONOLA	029 037 039 045 067 104 106
PIONEER	037 043 123
PRANDONI-PRINCE	027 073 114
PREMIER	093
PRINCE	027 114
PROTECH	037
PYE	029 037 039 045 067 104 106
QUASAR	026 027 040
QUELLE	013 014 021 028 029 031 037 044 050 051 052 068 070 071 072 084 090 096 097 101
RADIOLA	029 037 039 045 067 104 106
RADIOMARELLI	026 027 039 062 063 099 112
RANK	097
RBM	097
REDIFFUSION	034 063 090 114
REX	023 045 053 065 114
ROADSTAR	017
ROBOTRON	032 039
RTF	032 039
SABA	007 016 020 027 039 043 073 086 123
SAISHO	004 029 047 084 085 087 133
SALORA	064 081 086 089 090 098 101 115 117 126
SAMBERS	026 027 040 073
SAMPO	088
SAMSUNG	029 128 133
SANYO	001 009 024 032 060 071 084 094 117 120 128
SBR	037 067 104 131
SCHAUB LORENZ	001 051 062 089 090 101 105 108 114
SCHNEIDER	023 029 037 039 041 045 053 062 067 069 098 103 104 106 112
SEG	026
SEI	004 030
SELECO	023 045 053 065 114
SHARP	009 120 129
SIAREM	026 027 039 062 073
SICATEL	074
SIEMENS	012 013 014 028 031 056 068 072 120
SIERA	029 037 039 045 067 104 106
SINGER	026 039 062
SINUDYNE	004 026 030 039 062 099
SONOKO	037 133
SONY	006 009 015 084
STERN	023 045 065 114
TANDY	029 054 060 076 129
TASHIKO	009
TATUNG	029 060 066 073 084
TEC	023 029 112
TELEAVIA	007 016 020 043 123
TELEFUNKEN	007 013 018 021 038 043 046 123 127
TELETECH	133
TELEVIDEON	029 062 068 098
TENSAI	037
THOMSON	007 016 020 043 123
THORN	061 104
THORN-FERGUSON	018 042 046 050 061 074 104
TOSHIBA	009 082 092 097
TRANS CONTINENS	027 114
TRIUMPH	004
UHER	041 068 098
ULTRAVOX	026 029 039 062 086
UNIVERSUM	003 010
UNIVOX	074
VEGAVOX	109
VESTEL	079
VICTOR	116
VOXSON	039 114
WATSON	068
WATT RADIO	026 029 040 062 074 099
WEGA	009
WHITE WESTINGHOUSE	029 068
YOKO	029
ZANUSSI	023 045 065 114
ZOPPAS	023 045 065 114

Producer	**VCR Code**
AIWA	024 028
AKAI	018 026 028 044 063
ALBA	019
AMSTRAD	024
ARC EN CIEL	028 063
ARISTONA	031 064
ASA	036 037
BAIRD	028
BLAUPUNKT	002 017 059 064
BRANDT ELECTRONIQUE	028 063
BUSH	019
CGE	024 028 063
CONTINENTAL EDISON	028 063
CRAIG	006
CURTISMATHES	039 040
DAEWOO	007 041
DECCA	024 028
DEGRAAF	009 011 024 031 036
DUAL	028 063
DUMONT	009 024 036
DYNATECH	024
ELBE	023
EMERSON	008 021 024 039 040 047
FERGUSON	028 057 058 063 065 070
FIDELITY	024
FINLADIA	009 036
FINLUX	009 011 024 036
FISHER	006 009 022
FUNAI	024
GE	039 040
GOLDSTAR	010 037
GOODMANS	019 024 032
GRAETZ	028 063
GRANADA	009 036
GRUNDIG	001 002 003 036 059 064
HARMAN-KARDON	010
HIFIVOX	028 063
HINARI	008 019 046 052
HITACHI	011 024 028 048 050
IMPERIAL	024 066
INGELEN	028 063
INGERSOL	052
ITT	028
ITT-NOKIA	028 063
JENSEN	028
JVC	004 005 028 029 058 063
KENWOOD	028 029
KRIESLER	031 064
LLOYD	024
LOEWE OPTA	036 056 064
LOGIK	019 052
LXI	037
MAGNAVOX	039 040
MARANTZ	010 032 036 064
MATSUI	021 047 052
MEMOREX	006 009 024 031 037
METZ	002 064
MGA	035
MINERVA	002 059
MINOLTA	011
MITUSBISHI	029 035 050
MTC	024
MULTITECH	019 024
MURPHY	024
NAONIS	028 063
NEC	010 023 028 029 063
NECKERMANN	008 028 063
NOGAMATIC	028 063
NOKIA	009 028 063
NORDMENDE	001 005 012 013 014 028 063
NORDMENDS	004
OPTONICA	031 032
ORION	008 020 021 047 052
OSAKI	024 037
PANASONIC	045 061 062
PATHE' MARCONI	028 063
PENTAX	011
PERDIO	024
PHILIPS	027 031 032 036 053 056 064
PHONOLA	031 036 056 064
PIONEER	029
PROLINE	024
PYE	031 036 056 064
QUELLE	002 008 030
RADIOLA	031 064
RCA	039 040
REALISTIC	006 009 024 031 032
REX	004 028 063
SABA	004 005 013 014 028 063
SAISHO	008 021 047 052 060
SALORA	035
SAMSUNG	038 039 040 042 043 066
SANAUI	028 029
SANYO	006 009 025 047
SBR	036 053 056
SCHAUB LORENZ	028 063
SCHNEIDER	019 024 031 064 056
SEG	066
SEI-SINUDYNE	052
SELECO	028 063
SHARP	031 032 049
SHINTOM	019
SIEMENS	002 059 064
SIERA	031 064
SINUDYNE	052
SONY	030 033 034 051 055
STERN	028 063
STS	011
SUNKAI	047
SYLVANIA	024 035
SYMPHONIC	024 035
TASHIKO	024
TATUNG	024 028
TEAC	024 028
TEKNIKA	024
TELEAVIA	028 063
TELEFUNKEN	005 015 016 028 063
TENOSAL	019
THOMSON	012 028 063
THORN	028 058 063
THORN-FERGUSON	013 014 028 057 058 063 065 070
TOSHIBA	007 028 035 054 063
UHER	028 066
VECTOR RESERACH	010
VICTOR	028 029
WARDS	039 040
YAMAUA	010 028
ZANUSSI	028 063
ZENDER	063
ZOOPAS	028

12.2 Time table


Zeitzonen
Zeitzonen
Landeszeit
Gebiete mit Sommerzeit
17h Ortszeit der jeweiligen Zeitzohne bezogen auf 12h GMT
+7 Zeitunterschied gegenüber GMT in Stunden
-12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 GMT +1 +2 +3 +4 +5 +6 +7 +8 +9 +10 +11 +12
Mittemacht 1h 2h 3h 4h 5h 6h 7h 8h 9h 10h 11h 12h 13h 14h 15h 16h 17h 18h 19h 20h 21h 22h 23h

Appendix

12.3 Technical specification

TUNER

IF Input frequency	920...2150 MHz
IF Loop through output	920...2150 MHz
IF Bandwidth	8/55 MHz, automat.switching acc. to symbol rate
Input impedance	75 ohms
Input signal level	- 65 dbm...- 25 dbm
LNB Polarization swiching voltage	13/18 V DC @ max 400 mA, Short Circuit Protection
Band switching	22 kHz Tone
I/Q Output	Unbalanced Output, Controlled by AGC Input

FRONT-END DEMODULATOR

Demodulation capacity	QPSK Demodulation
Symbol rate	2 ~ 35 Msps (SCPC, MCPC)
Viterbi decoding rate	1/2, 2/3, 3/4, 5/6, 7/8, 8/9
Reed solomon decoding	FEC : 204, 188, t = 8

TRANSPORT DEMULTIPLEXER

Demultiplex	According to ISO/IEC 13818-1
max. input stream	60 MHz (serial) / 7,5 MHz (parallel)
PID Handling capability	32 PID
SI Filtering	According to DVB-SI spec (ETS 300 468)

VIDEO DECODING PARAMETERS

Video decoding	ISO/IEC 13818-2 MP@ML
Aspect ratio	4:3, 16:9, Pan&Scan, LetterBox
Resolution	max. 720 x 576

AUDIO DECODING PARAMETERS

Audio decoding	ISO/IEC 13818-3 Layer I & II
Operating mode	Mono, Dual, Stereo, Joint Stereo
Sampling frequency	32, 44.1, 48 kHz

MICROPROCESSOR AND MAIN MEMORIES

Microprocessor type	MC 68340-25 (25 MHz)
Processing rate	4.7 MIPS
Flash ROM (for program memory)	1 Mbytes (512 K x 16)
DRAM	4 Mbytes (1 M x 16 x 2)
Flash ROM (for data memory)	256 Kbytes (256 K x 8)

DATA SERVICE PORT

Connector	9 Pin D-Female Type
Protocol	RS-232 Asynch
Data rate	max. 19200 bps

GENERAL DATA

Input power voltage	AC 230 V, 50 Hz
Power consumption	max. 35 Watts
Dimension	337 x 240 x 69 mm
Weight	2,5 kg
Operation temperature	0...40 Deg.

FRONT PANEL

4 digits LED Display	Channel Numbers Display
3 Buttons	Power, Down, Up
IR Sensor	38 kHz
PCMCIA Slots	2

REAR PANEL

Digital IF-Input	F-Female Type
Digital IF-Output (Loop-through)	F-Female Type
Audio Output	2 RCA (Phono)
Audio Data Service Port	9 Pin D-Type Male
3 Scart Output	1 TV, 1 VCR, 1 Analogue SAT
IR Sensor	38 kHz
Power Cord	Europe Flexible Cord

VCR, TV SCART OUTPUT

Video Output Impedance	75 ohms
Video Output Level	1,0 Vpp by 75 ohms
Audio Output Impedance	600 ohms unbalanced
Audio Output Level	3,0 Vpp with Volume Control

REMOTE CONTROL UNIT (UNIVERSAL)

Universal Remote Control	IR (Carrier Freq. 38 kHz) for Digital-Sat, Analog-Sat, TV, VCR
Battery	2 x 1.5 V AA
26 Keys	Power, 0...9, Audio, Mute, Info, Up, Down, Left, Right,Menu/Select, Exit, Guide, Fav, Last, Radio, A/D, VCR out